

Appl. No. : 10/677,077

Amdt. Dated: October 5, 2007

Reply to Office Action of July 11, 2007

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AMENDMENTSTo the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously presented) A drive circuit for a lamp comprising:
an electronic switch connected in series with a lamp and a source of DC voltage and having a control input terminal, and
a pulse-width-modulation (PWM) control circuit having an input connectable to the source of DC voltage and an output connected to the control input terminal of the electronic switch for varying lamp brightness in proportion to the PWM duty cycle,
the control circuit including a temperature-sensing circuit for reducing the PWM duty cycle when lamp temperature exceeds a predetermined temperature.
2. (Previously presented) The drive circuit of claim 1, wherein the control circuit includes a timing circuit and the temperature-sensing circuit includes impedance altering circuitry.
3. (Previously presented) The drive circuit of claim 2, wherein the timing circuit includes an RC circuit and the impedance altered by the temperature-sensing circuit is in a capacitance discharge circuit.
4. (Previously presented) The drive circuit of claim 2, wherein the impedance altering circuitry includes two resistances connected in parallel and a thermal switch in series with one of the resistances.

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5. (Original) The drive circuit of claim 4, wherein the control circuit includes a selectively operable brightness control switch connected in series with the thermal switch.

6. (Original) The drive circuit of claim 1, and further comprising adjustment circuitry for automatically adjusting a control voltage of the control circuit in response to a change in the voltage of the source.

7. (Original) The drive circuit of claim 6, wherein the adjustment circuitry includes a supply voltage-dependent voltage regulator for maintaining a constant operating voltage for the control circuit irrespective of the voltage of the source.

8. (Previously presented) A portable spotlight comprising:
a lamp; and
a drive circuit connected to the lamp, the drive circuit including
an electronic switch connected in series with the lamp and a source of DC voltage and
having a control input terminal, and

a pulse-width-modulation (PWM) control circuit having an input connectable to the source of DC voltage and an output connected to the control input terminal of the electronic switch for varying lamp brightness in proportion to the PWM duty cycle,

the control circuit including a temperature-sensing circuit for reducing the PWM duty cycle when lamp temperature exceeds a predetermined temperature.

9. (Previously presented) The spotlight of claim 8, wherein the control circuit includes a timing circuit having two resistances connected in parallel, the temperature-sensing circuit including a thermal switch connected in series with one of the resistances.

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10. (Original) The spotlight of claim 9, and further comprising a selectively operable brightness control switch connected in series with the thermal switch.

11. (Previously presented) The spotlight of claim 8, wherein the temperature-sensing circuit includes a thermal switch.

12. (Previously presented) The spotlight of claim 8, wherein the control circuit includes an integrated circuit timer configured as an astable multivibrator.

Claims 13-17 (Cancelled)

18. (Cancelled)

19. (Currently amended) ~~The drive circuit of claim 18,~~ A drive circuit for a lamp comprising:

electronic switch means connected to a lamp for controlling current flow through the lamp from a DC source and having a control input terminal, and

control means connected to the control input terminal of the switch means for pulse-width modulation (PWM) of the switch means for varying lamp brightness in proportion to PWM duty cycle,

the control means including temperature-responsive means for reducing the PWM duty cycle when lamp temperature exceeds a predetermined temperature, wherein the temperature-responsive means includes thermal switch means.

20. (Cancelled)

21. (Currently amended) ~~The drive circuit of claim 18, and further comprising A~~ drive circuit for a lamp comprising:

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electronic switch means connected to a lamp for controlling current flow through the lamp from a DC source and having a control input terminal, and

control means connected to the control input terminal of the switch means for pulse-width-modulation (PWM) of the switch means for varying lamp brightness in proportion to PWM duty cycle,

the control means including temperature-responsive means for reducing the PWM duty cycle when lamp temperature exceeds a predetermined temperature, and

adjustment means coupled to the control means for automatically adjusting the control voltage in response to changes in the voltage of the DC source.

22. (Previously presented) A method of protecting a lamp circuit from overheating comprising:

pulse-width-modulating a supply voltage for controlling lamp brightness,
sensing lamp circuit temperature, and
reducing the duty cycle of pulse width modulation in response to a sensed temperature exceeding a predetermined temperature,

the pulse-width-modulating including connecting an electronic switch in series with the lamp and pulse-width-modulating a signal at a control terminal of the switch.

23. (Previously presented) A method of protecting a lamp circuit from overheating comprising:

pulse-width-modulating a supply voltage for controlling lamp brightness,
sensing lamp circuit temperature, and

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reducing the duty cycle of pulse width modulation in response to a sensed temperature exceeding a predetermined temperature by altering a resistance in a timing circuit.

24. (Previously presented) The method of claim 23, wherein the altering resistance includes disconnecting one of two parallel-connected resistors.

25. (Previously presented) A method of protecting a lamp circuit from overheating comprising:

pulse-width-modulating a supply voltage for controlling lamp brightness,

automatically adjusting the duty cycle of pulse width modulation in response to changes in the supply voltage,

sensing lamp circuit temperature, and

reducing the duty cycle of pulse width modulation in response to a sensed temperature exceeding a predetermined temperature.

26. (Previously presented) A drive circuit for a lamp comprising:

an electronic switch galvanically connected in series with a lamp and a source of DC voltage and having a control input terminal, and

a pulse-width-modulation (PWM) control circuit having an input connectable to the source of DC voltage and an output connected to the control input terminal of the electronic switch for varying lamp brightness in proportion to the PWM duty cycle,

the control circuit including a temperature-sensing circuit for reducing the PWM duty cycle when lamp temperature exceeds a predetermined temperature.